toxin was administered to every man at the dairy. Of course as these men milked they would infect the milk in the manner so well explained in Dr. Boston's paper, and this accounted for the spread of the disease. The New York City Board of Health took an interest in the matter and it was through their investigations that it was proved that the bacilli found in the throats of these milkmen were the true Klebs-Loeffler bacilli and were virulent. That the disease did not take more hold and we did not have more cases among the large number of families supplied by this dairy is explained by the fact that the bacilli will not grow at a temperature of 40 F. The milk at this dairy is cooled down to 40 immediately after milking and is kept so until delivered. Hence there was little chance for the bacilli to multiply, and only a few comparatively found their way into the throats of the milk-consumers.

DR. C. W. LILLIE, East St. Louis, Ill.—The question of the value of taking cultures from the throat is pretty well settled, but whether it is to be done for the benefit of the patient or not is not clear. I think the culture method will be of more benefit in the way of prophylaxis than it will be in the treatment of an individual case, and it is in tnat direction that we must expect its greatest benefits. The case referred to by Dr. Newton is an example of the value in culture-taking. If the boards of health were always careful, and always placed the matter in the hands of a competent person, a much greater benefit would be experienced, but this matter is usually left in the hands of politicians for certain reasons, who hand over the work to one specially favored by them, with the result that but little results are obtained. If this matter should be taken in hand by persons who are competent it would be a very useful method. I think it is the duty of the medical profession to urge upon the health authorities the necessity for making these cultures for determining the presence or absence of the bacilli and thus prevent the spread of this disease.

TOTAL RETROFLEXION OF THE IRIS.*

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Cases of total retroflexion of the iris are of such rare occurrence that I venture to report the following:

A. G., German, aged 55, laborer, presented himself to me at my clinic at the Charity Eye, Ear and Throat Hospital, Buffalo, N. Y., on May 26, 1899. Two weeks previous to that date he had fallen from a wagon, and had struck the left side of his face and head against the pavement. He did not think that there was a stone or other object on the pavement against which he fell, but it seems quite probable to me that he was mistaken. According to the patient's statement, there had never been any injury or disease of either eye previous to this fall. Vision had been acute in both eyes, and the color of eyes and size of pupils had been alike. At the time of his first visit, the left eyelids were somewhat ecchymotic, and the episcleral tissues of the left eyeball were deeply congested, but there was no pain. The cornea was slightly hazy, the aqueous chamber was filled with blood, and the tension of the eyeball was somewhat diminished, although there had been no laceration of the sclera or cornea and not even an abrasion of the conjunctiva. The presence of blood in the aqueous humor prevented any view of the fundus from being obtained. A simple treatment, consisting in the occasional use of hot fomentations over the eye to favor the absorption of the blood, was prescribed, together with instillations of a saturated solution of boracic acid.

The right eye was normal in every respect. The pupil was of usual size and reacted well to light. The iris was bright and lustrous and of a rather deep-blue color. Both eyes were quite prominent in their orbits.

The blood in the aqueous humor of the left eye was gradually absorbed, and had quite disappeared on June 10. There remained, however, a quantity of dark-gray colored debris, which floated about in clumps and shreds, and which seemed to be attached more or less to the parts in the ciliary region. This debris also became absorbed, only a little of it being visible on June 23. At this time, no trace of the iris could be found, either by the use of focal illumination or the ophthalmoscope; neither were the ciliary processes visible. Without instrumental assistance, the blackness of the pupillary area was co-equal in size with that of the corneal disc, and the ophthalmoscope gave a reddish reflex of the fundus of the same diameter. The appearance, in fact, was that of total aniridia. Not only was there an absence of the iris, but the crystalline lens had also disappeared, and with + 10 D. vision equaled 6/60. There were still some opacities in the aqueous humor which somewhat obscured an ophthalmoscopic examination of the fundus, and I deferred my search for the crystalline lens to a later date.

In the course of a few weeks, the reaction had entirely subsided, the tension had become normal, all opacities had disappeared, and every part of the fundus accessible to ophthalmoscopic examination was perfectly clear and distinct; aside from the aphakia and the disappearance of the iris, there was no evidence of any deep-seated injury or disease. A careful search was then made, both by myself and Drs. Abbott, Howe, Grove, and other ophthalmologists, and we all failed to find the crystalline lens in the vitreous cavity or in any other part of the eye. It certainly had not been extruded from the eyeball, as there had been no rupture of the sclera, and it was concluded that after being more or less lacerated by the contusion, it had become rapidly absorbed.

As regards the invisibility of the iris, it was decided that this was due to its having been thrown backwards, throughout its whole extent, against the ciliary body. Had it been torn from its periphery, it would have been seen in some part of the eyeball, and probably at the bottom of the aqueous chamber. But not even the smallest remnant of it could be found either early or late in the case.

On February 16, 1900, a rough test gave vision equal to 5/12 with a + 11 D. spherical glass. A spherocylindrical combination might have brought the vision to a higher degree of acuteness, but the patient disappeared, and a further test has not been possible.

Reduced to its lowest terms, then, this case is as follows: a violent concussion of a previously normal eye, followed by aphakia and disappearance of the iris. The crystalline lens was either dislocated to a point where it could not be found, or else it had become absorbed. The latter supposition is the one I accept. The iris was thrown entirely out of view, and this could only be done, so far as I am able to determine, by being reflected back against the ciliary body.

The mechanism of retroflexion is very obscure, but in this case it evidently consisted, in part, 1, in the destruction of the posterior support of the iris by a laceration of the zonule in a large part of its extent, and thus permitting a sinking backwards of the lens whether lacerated or not; 2, in rupturing the pupillary margin of the iris, probably at several points, allowing this membrane to become easily turned back and super-

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imposed over the ciliary body; and 3, after being torn at its pupillary margin, and thrown backwards against the ciliary body, the effusion of blood, which attended the lacerations, necessarily filled the space between the iris and cornea, and thus crowded upon the already reflected iris, and held it firmly in its new position till it became so fixed there that it could not replace itself.

This case is not only of interest as an example of an exceedingly rare traumatism of the iris, but it also shows how violent a contusion and injury may be inflicted on the eye, with remarkable lesions in the anterior portion of the globe, and yet useful vision be preserved.

REMARKS.

Retroflexion of the iris, otherwise known as inversion, introversion, retroversion, sinking in, disappearance, retraction, etc., of the iris, may be partial or total. The partial form may follow various traumatisms and certain operations in which the zonule has been ruptured, either with or without luxation of the crystalline lens. It has occurred in my practice in two cases during the operation of simple extraction of senile cataract, attended by rupture of the zonule and escape of vitreous humor. Passeur[1] records a case in which partial retroflexion occurred during an attempt to perform an iridectomy for seconday glaucoma, following luxation of the crystalline lens. Similar cases have been seen by others. A partial retroflexion of the iris has also been noted after contusions of the eyeball, and particularly after wounds of the cornea or sclera near the corneo-scleral junction, with rupture of the zonule and hernia of the vitreous body. But some cases have been recorded as partial retroflexion in the bibliographies of this lesion which undoubtedly belong to another class. For example, a case cited by C. Bell Taylor,[2] is not one of retroflexion, but a traumatic iridectomy in both eyes. No claim is made by the author that it was anything else. Eales and White[3] describe two cases of rupture of the sclera, with entanglement of the iris in the wound. These should not be regarded as retroflexions of the iris, as the description does not sustain such a diagnosis. It would be more proper to classify them as partial hernias.

Total retroflexion has a much greater interest than the partial form, inasmuch as it often occurs without any laceration of the cornea or sclera, and its mechanism is problematic. Von Ammon's case,[4] upon whose description the pathology of this lesion has up to the present time been based, was the first definite example of total retroflexion without laceration of the outer coat of the eye. The case of J. Adam Schmidt,[5] recorded in 1804, undoubtedly belongs to this class, but is indefinite in its history. Von Ammon's case marks the beginning of our real knowledge of this subject. In this case there were no external lesions of the eyes, yet in both there was total retroflexion of the iris.

Since this memorable report, only a small number of undoubted cases have been recorded. We may recall the following: Vose Solomon[6] reported a case in which there was total disappearance of the iris from contusion, with laceration of the sclera. A second one was by John Williams[7] in which there was injury of the eyes with complete loss of the iris and crystalline lens. A third case was by G. von Ottingen, of Dorpat,[8] caused by concussion of the eye, the iris disappearing and the crystalline lens, with its capsule, being dislocated into the vitreous humor. C. Bader[9] refers to a fourth case which was undoubtedly one of this lesion, and was probably caused by traumatism. The iris was apparently absent in an eye which had been blind for years and had a chalky lens rolling about in the hyaloid fossa. After excision of the eye, the iris "was found pressed upon the ciliary processes by aqueous humor." A fifth case was that of A. Samelson,[10] in which there was a total retroflexion of the iris, only a narrow border of it being visible. The ciliary processes were covered by this dark mass. L. W. Beardsley[11] describes a sixth case, seen on the fourth day after a contusion. There was a recent scar of the upper part of the cornea about 2 mm. from the limbus and about 3 mm. in length. The iris was invisible, and the crystalline lens became absorbed. With + 12 D. Sph. the vision ultimately reached 6/15. A seventh case was also mentioned in the same connection by Dr. Beardsley as occurring in the practice of Dr. C. Barck. In this case the eye was struck by a stone, and was seen a few days later. There was no external wound or cicatrix, either of the cornea or sclera. The crystalline lens was dislocated downward into the vitreous humor, and there was no trace of the iris. The fundus was just visible. Vision was about 6/50 with + 12 D. Sph. The case was only seen once.

Besides these cases, two or three others have been referred to by writers, but I have not yet been able to verify them, or to determine whether they are partial or total. This brief résumé, however, will suffice to show the infrequency of the lesion, and under these circumstances I may be pardoned for presenting to such a body as this the report of a single case.

1. Archiv für Ophthalmologie, 1873, Band xix, Ab. ii, p. 317.
2. London Lancet, 1873, vol. ii, p. 839.
3. Ibid., 1899, vol. ii, p. 412.
4. Archiv für Ophthalmologie, Band i, 1854, p. 119.
5. Schmidt und Himly's Ophthalmologische Bibliotek, Band iii, 1804, p. 171.
6. British Med. Jour., April 14, 1860.
7. Dublin Medical Journal, vol. xxxviii, August, 1864, p. 250.
8. Petersburg Med. Zeitschrift, xi, i, 1866.
9. Natural and Morbid Changes of the Human Eye and Their Treatment, London, 1868, p. 352.
10. British Medical Journal, Sept. 28, 1872.
11. American Journal of Ophthalmology, vol. xvi, 1899, p. 300.

TARSADENITIS MEIBOMICA.*

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Definition.—A subacute or chronic infection of the Meibomian glands, tending to periodical acute exacerbations and, secondarily, altering the whole structure of the tarsal cartilages, chiefly the upper.

Etiology.—Diffusion through part, or all, of the Meibomian glandular system of chalazial disintegration products and their cause.

Pathogenesis.—Chalazia representing unhealthy granulation tissue of a very low type, scantily supplied with blood vessels, tend, from this nature of their make-up, to break down. The age of the patient and the condition of the general health modify this tendency to disintegration, great youthfulness and general debility favoring a destruction more or less acute, while more advanced age and good health favor chronicity. This circumstance is due merely to varying degrees of body resistance. Chalazia may, therefore, undergo, 1, suppuration; 2, chronic inflammatory softening.

1. Suppuration may be so severe as to bring about not only the destruction of the neoplastic tissue, but also of the tumor sac. This occurs chiefly in children and young persons and is the only method of spontaneous

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